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Zooplankton vertical distribution in waters of the Mallorca shelf: autumn and summer

M. M. Santandreu and M. L. Fernandez de Puelles

Spanish Institute of Oceanography, Centro Costero de Baleares, Muelle de Poniente 07015. Palma de Mallorca, Spain

Abstract

The zooplankton vertical distribution (VD) has been studied in two areas of the Mallorca shelf during December 2009 and July 2010. Five and eight, depth levels were sampled at day/night by using BIONESS an MOCNESS multinet. 17 zooplankton groups were found, where copepods were the most abundant (70%), being responsible of the whole zooplankton VD pattern. Copepod high diversity was found in both months (4.3 bits and 3.3bits) and more than 88 species identified. The highest diversity was found in deeper waters (90-120 m) in the afternoon than during day time (0-90m) in December but in July, always found at deeper layer (100-150 m), suggesting that epipelagic and mesopelagic copepods co-occurred, and diel changes induced the increased diversity. *Clausocalanus arcuicornis (13%), Nannocalanus minor (10%)* and *Pleuromamma (P. gracilis* and *P. abdominalis, 8% and 6%*) were the most abundant. However others such as *Acartia clausi* and *Clausocalanus furcatus* appeared in December and *Centropages typicus, Euchaeta acuta* and *Lucicutia flavicornis* in July.

In relation to water conditions the VD exhibited different patterns with a higher difference in autumn between the two sites than in summer when the zooplankton was concentrated around the FMD. Species like *N. minor, A. clausi*, as well as all *Clausocalanus* and *Oithona* did not show clear vertical movements*;* but others showed weak, intermediate or strong migration, such as *Lucicutia*, *Euchaeta* and *Pleuromamma* which exhibited clear nocturnal VD. The importance of these species in the active carbon transfer is discussed in this oligotrophic area of the central western Mediterranean.

Kewords: Zooplankton, copepods, vertical distribution, Mallorca shelf, Western Mediterranean